

LEITNER control system







LEITNER control system

Innovative, safe and reliable

Our solutions are characterized by innovative ideas, sustainable customer benefits and the application of leading technologies. The AC direct drive from LEITNER with active-infeed converter technology, for example, is a milestone within the development of intelligent mechatronic components for the ropeway market.

Approved LEITNER software reliably manages the control and monitoring functions of the installation. As hardware periphery, we use fail-safe automation devices from Siemens. By combining our technological knowledge with the best industrial electronics products, we achieve an excellent performance in the automation of ropeway installations.

The LEITNER control system is characterized by continuous networking of the entire facility with Industrial Ethernet and optical fibers as well as decentralized I/O peripheral devices. In interaction with high-performance LEITNER visualization technology, downtimes can be reduced to a minimum.

The innovative operating and monitoring system LEITNER Monitor offers all advantages of web-based IT technologies. Remote diagnostics and remote maintenance via Internet as well as numerous LEITNER online services provide the best support for your staff to maintain the facility.

Our technicians design trend-setting solutions and are your partners across the installation's entire life cycle.



LeitControl

Easy, intuitive, central

Available as of 2015

Basis

LeitControl is a completely novel, touch-control-based operational concept for ropeways. Thanks to its easy, central and highly intuitive control system, this LEITNER innovation offers ropeway operators new levels of ease of use.

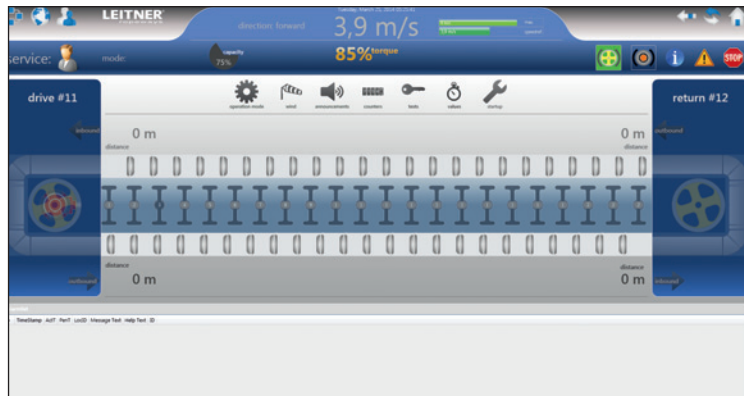
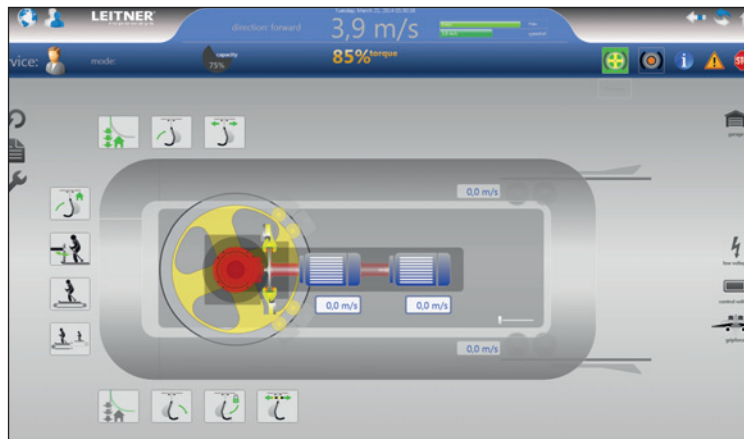
Description

The basic idea for the development of LeitControl was the conversion of the system from a hardware-oriented to an application/function-oriented operational concept. The newly developed operator panel features all control keys needed for day-to-day operation.

With a conventional control system, up to 7 individual, manual operational steps have to be taken, for example, in order to garage the vehicles – from the correct positioning of the system and the adjustment of the switch points to the start of the conveyor chains. With LeitControl, the operator simply needs to activate the GARAGING function, and the rest of the process is carried out fully automatically without any further operator action.

This operational concept runs through the entire operation of the system, both during normal operation and during trials and tests (e.g. brake tests) that are necessary for commissioning and/or regular inspections.

Moreover, LeitControl allows monitoring all ropeways within a skiing region centrally from a single screen.



Benefits All **operating elements** needed for the system's **day-to-day operation** are aligned at the operator panel, with a **clear view of the passenger area**.

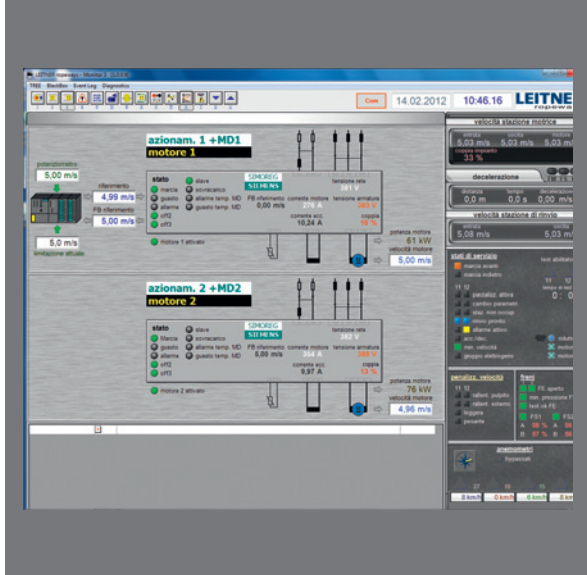
Fully automated take-over of all functional processes which previously had to be controlled manually (e.g. vehicle parking procedure, brake tests).

Utmost ease of use for operators through an **easy, clearly arranged operator panel** and **intuitive touch-screen operation** via **multi-screen** or **tablet**.

Significant reduction of **training periods** for new employees and **avoidance of operator errors** and related downtimes **during day-to-day operation** thanks to a **function-oriented control concept**.

Integrated **help function** with linking to wiring schemes and the user manual.

Optional integration of **automated announcements** and display of the visualization in **various, quickly changeable languages**.



LEITNER visualization

Maximum transparency during operation

Basics

Complex aspects are presented clearly and transparently. In order to make correct decisions at all times, the staff needs clear and structured information on the status of the installation. Efficient diagnostic functions support the maintenance of your ropeway – the availability is increased.

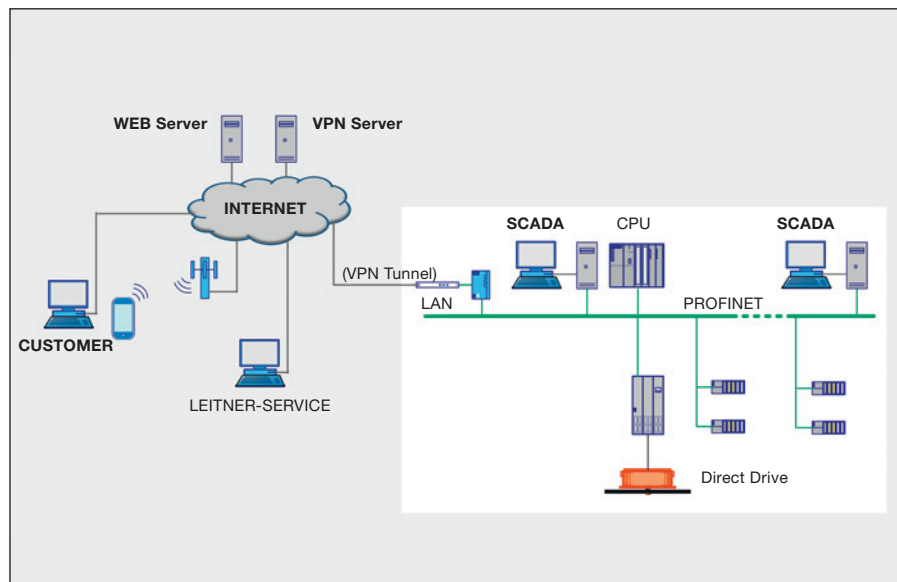
Description

LEITNER Monitor is a Windows-based process visualization system, which runs on standard industrial PC hardware. The high performance of this SCADA system is supported by the extensive Ethernet network of the LEITNER control system – all data and information is centrally available – also for remote diagnosis and remote maintenance of the overall system via LAN or the Internet.

High-resolution displays constitute the fully graphical user interface, the SCADA stations are an integrative part of the LEITNER control panels.

LEITNER Monitor functions:

- Alarm messages with primary fault display
- Message archives
- Display of dynamic operating data
- Data and system status monitoring
- Event logger
- Bypassing of safety functions
- Monitoring of system parameters
- Test functions
- Wind monitor
- Black box functions
- Online help functions
- Messenger service



Advantages Windows-based user interfaces with full graphic display, 3-D object presentation and menu-guided design for easy and **structured operation**.

For operational analyses, extensive **data archiving** and **evaluation functions** are integrated in the SCADA system – e.g. clamping force recordings with optional vehicle identification.

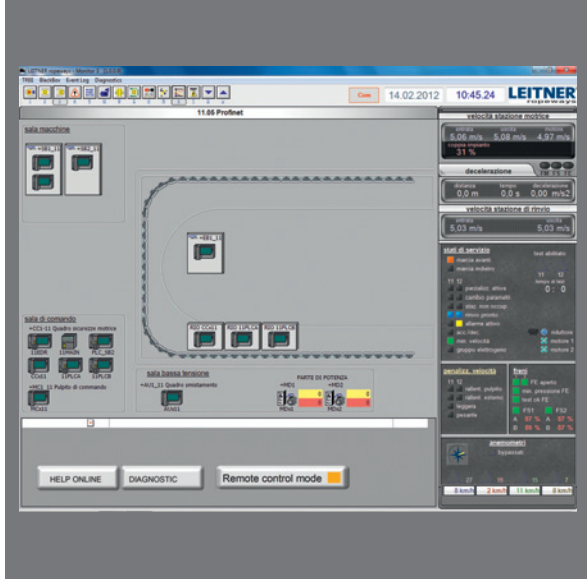
Thanks to appropriate structures, alarms and messages are clearly recognizable. The numerous **filter and sorting functions** of the message archive facilitate the **exact analysis** of causes of malfunctions.

Downtimes are minimized in connection with LEITNER Help and further **online support functions**. LEITNER control's **web-supported diagnosis functions** show the hardware structures and affected structural components as graphic presentations.

Messaging of **event-controlled alarms** via SMS or by e-mail to the **control center**.

The unique LEITNER **bypass system** allows for the systematic selective deactivation of individual safety functions via the SCADA system – **the installation stays available**. Access rights to security-relevant functions are protected by multi-step security measures.

Remote diagnostics and remote maintenance via LAN and Internet connections. The LEITNER **Webnavigator** enables you to **monitor your facility** from any location – even via mobile PDA systems. Remote maintenance of the ropeway is possible at expert level.



LEITNER operating concept

Operator-friendly design for more efficiency

Basics

Modern ropeways are complex installations which have to meet the highest demands in terms of safety and availability. But it's not enough to have perfect technology at one's disposal – functional design and intelligent LEITNER software solutions provide your staff with all they need for efficient operating.

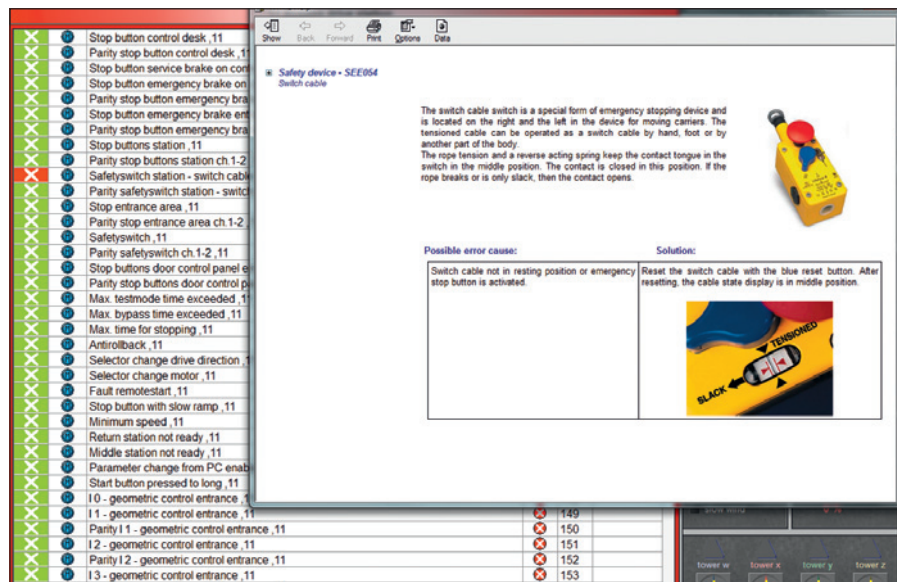
Description

The installations are being supervised even during automatic operation. This is why an optimal design of the HMI interface to the operating personnel is of utmost importance. The LEITNER control desk provides an ergonomic workstation and facilitates both operation and monitoring, during which the installation always remains in the operator's field of view.

Nevertheless, component failures do happen – what's crucial in such cases is that the staff is actively supported in locating the failure. The high performance level of LEITNER visualization with Profinet communication and numerous integrated diagnostic tools reduce downtimes to a minimum.

The exclusive LEITNER bypass system allows for the systematic and transparent deactivation of individual safety functions – the installation stays available. Operating the facility on emergency drive is now only necessary in exceptional cases. The functional safety of the ropeway is warranted by operational contingency measures, access rights are protected by multi-step security barriers.

Extensive help functions, remote maintenance and remote diagnostics via the LEITNER Webserver solution round off the operating concept.



Advantages

The **decentralized design** of the installation's control system **makes maintenance work easy**, the I/O periphery is located directly at the corresponding function unit (e.g. brakes, tensioning system, stations). The technician can track the status of the **sensors and actuators** directly on the display.

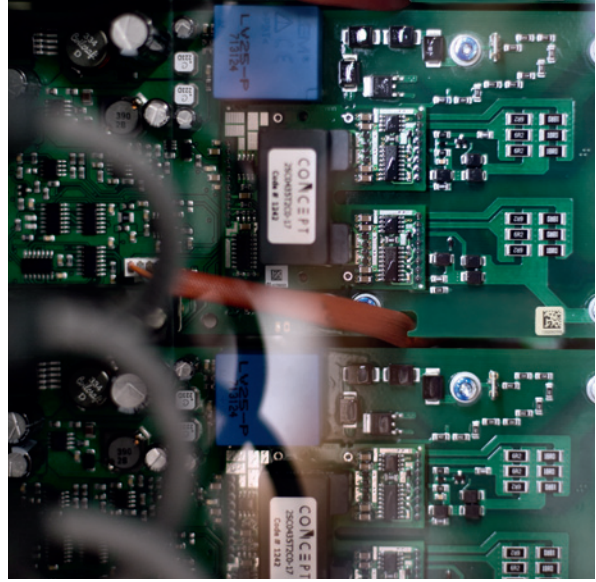
Continuous **Ethernet communication** enables the operating and maintenance staff to utilize **high-performance diagnostic functions** – either through the user-friendly LEITNER **Monitor visualization system** or through LEITNER Webnavigator **remote maintenance** or **remote diagnostics**.

Numerous software diagnosis tools allow for extensive testing of the installation without having to load it with weights – e.g. the LEITNER **brake simulator**, which allows for the **complete diagnosis** of the brake system and the brake settings.

Maintenance software integrated in SCADA, such as **Help** or **Online Support**, with access to the circuit diagrams, supports maintenance work and offers clear indications for preventive maintenance.

An optional **event-driven notification** of the main operator via SMS or by e-mail service completes the operational concept.

Within certain tolerances, readouts and **temporal adjustments** of **installation parameters** via SCADA support your staff in the corrective maintenance of the installation.



LEITNER control system

Functional safety that meets the highest demands

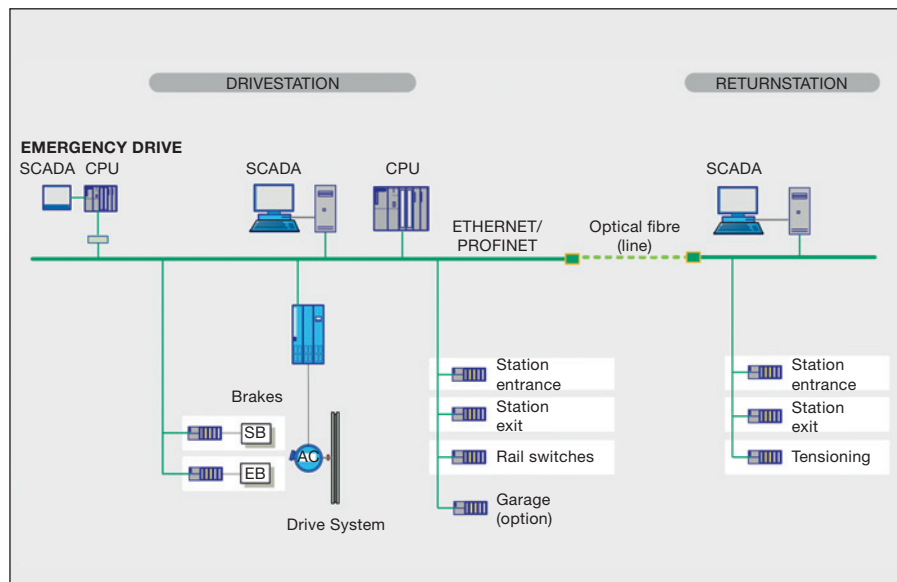
Basics Even under the toughest conditions, the highest demands are placed on the functional safety and reliability of the installation. LEITNER control systems provide perfect automatic operation and, thanks to their high performance, support the continuously high availability of the installation.

Description All control and monitoring functions are carried out by fail-safe PLC units. Cutting-edge Simatic S7 automation systems from Siemens form the hardware basis of our control systems.

The future-proof architecture of the LEITNER control system is characterized by the decentralized design of the I/O controllers and of the peripheral modules.

For a high-performance automation system, providing real-time data and information about the complete installation is a must-have. The LEITNER control system is characterized by a continuous Ethernet communication structure. A fiber-optics Profinet network connects the stations. Field devices of all sub-systems (e.g. brakes, tensioning system) are connected to the central CPU in the drive station.

This ensures that a homogeneous data base of the entire ropeway is available for processing through the LEITNER control software or through high-performance operating and display functions in the visualization system LeitControl. The transparency of the data and an extensive diagnostic ability is upheld even in emergency drive operation.



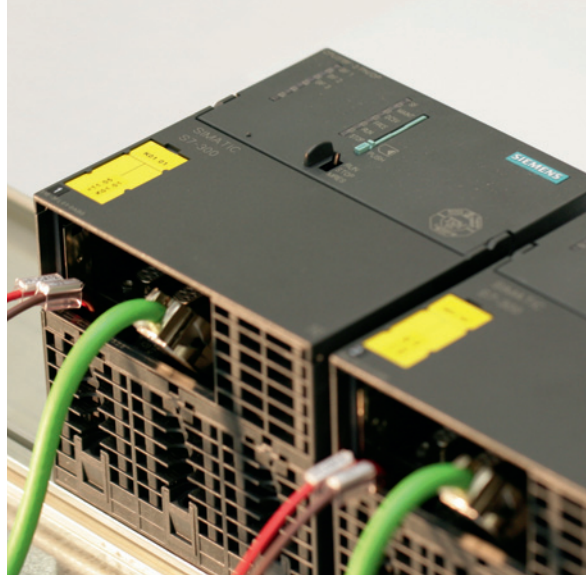
Advantages Approved fail-safe technology and extensive **safety engineering** ensure a correspondingly high level of risk reduction. The system's **functional safety** is guaranteed by LEITNER ropeway software, which, in connection with TÜV-certified programs and Simatic S7 F automation devices, has proven its worth around the world.

All exposed Simatic components are built in SIPLUS technique. Even when operated at low temperatures and under great stress from air humidity, these robust components show **enhanced reliability**.

For installations requiring high availability, the **modular LEITNER control concept** can also be upgraded to a **redundant two-channel version** – preferably in cold-standby design.

In either case, the **LEITNER bypass system** supports your staff in fulfilling the **task of maintaining the system's availability** through safe and transparent deactivation of individual safety functions.

Maintenance work is made easy by the decentralized design of the control installations. Continuous **Ethernet communication** enables the operating personnel to utilize **high-performance diagnostic functions** – either through the user-friendly LEITNER Monitor visualization system or through LEITNER Webnavigator **remote maintenance** or **remote diagnostics**.



Redundant LEITNER control system

Guaranteed availability

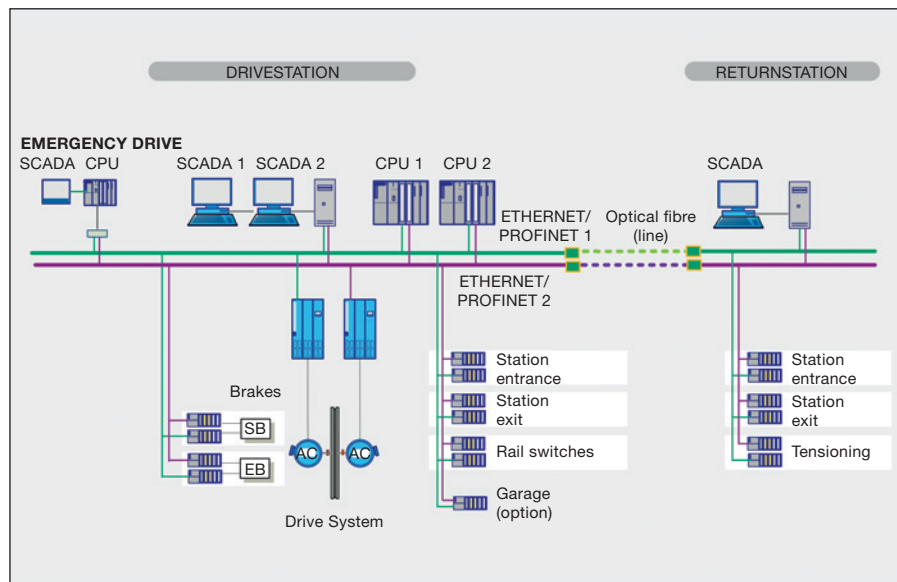
Basics Important ropeways mustn't stand still – this is where the redundant LEITNER control system comes into play. The highly available system configuration guarantees maximum protection against breakdowns. Your passengers can enjoy the unlimited availability of the installation.

Description The redundant LEITNER control system is characterized by a continuous two-channel structure of its control and monitoring functions. Two central I/O controllers (CPUs) in the drive station are operated in cold-standby mode. Double remote I/O field devices are also at hand and networked with the I/O controllers via redundant communication structures.

In case of demand, the remaining I/O controller or the second peripheral unit simply takes over the function – thus enabling the installation to keep running smoothly.

The redundant LEITNER control system also provides a continuous Industrial Ethernet networking of the entire facility, including all advantages that come with it. It connects the field devices of all sub-systems (e.g. brakes, tensioning system) to the two central I/O controller units in the drive station.

This ensures that a homogeneous data base of the entire installation is available for processing through the LEITNER control software or for the high-performance operating and display functions in the visualization system LEITNER Monitor.



Advantages

The redundant LEITNER control system concept represents a **perfect solution** for the **highest demands** in terms of system availability – e.g. in urban applications or especially **important connecting ropeways**.

The **innovative structure** of the two-channel LEITNER control system, the application of **premium-quality industrial components** and the consistent implementation of quality control measures guarantee the **highest level of installation availability**.

Fail-safe technology and extensive **safety engineering** ensure a correspondingly high level of risk reduction. The **functional safety** is guaranteed by proven LEITNER ropeway software in connection with TÜV-certified programs and fail-safe automation devices from Siemens.

All exposed Simatic components are built in SIPLUS technique. Even when operated at low temperatures and under great stress from air humidity, these robust components show **enhanced reliability**.

Continuous **Ethernet communication** supports the provision of **high-performance diagnostic functions** – either through the user-friendly LEITNER Monitor visualization system or through **online support** such as remote maintenance or remote diagnostics via LEITNER Webnavigator Internet connection.



Tele-assistance and mobile control panels

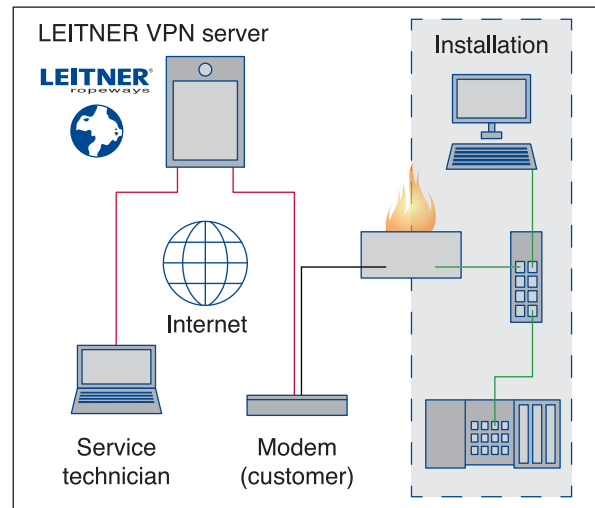
Improving functionality, ensuring availability

Basis For the LEITNER control system, a tele-assistance and optional control panels have been developed in order to facilitate the ropeway operator's day-to-day work at the installation, to improve functionality and to ensure availability.

Description Via the Internet, the LEITNER tele-assistance connects the ropeway installation with the PC of a LEITNER service technician, using a firewall-protected VPN connection. This makes it possible to check the installation's operating status directly from LEITNER headquarters in Sterzing (Italy) and to quickly and efficiently support the operator in checking the installation's functionality and in finding solutions.

The LEITNER radio remote controls for the station, the garage and the line were developed for a user-friendly and location-independent operation of the installation. That's why there is a central radio master unit built into the control cabinet, which communicates with the ruggedly and modularly designed remote controls via a 433-MHz ISM band. At the control cabinet as well as on the radio remote control, radio operation has to be activated with a key switch or a coded magnet key, respectively.

With the new, mobile operation monitoring system, the visualization of the installation can be transmitted via WLAN to further PCs as well as to mobile devices (tablet, smartphone). This makes monitoring the installation status easy and location-independent. Moreover, this allows for several LEITNER installations in a skiing region to be monitored with a single mobile device.



Benefits The **LEITNER tele-assistance** supports **trouble-shooting and fault correction** and thereby **avoids unnecessary mobilization** of service personnel.

Installation **downtimes** can be **reasonably shortened** while **improving operational reliability**, both of which decisively **helps reducing operating costs**.

Easy and user-friendly remote control of the installation with **LEITNER radio remote controls** offering the following functions:

- Reset/start/stop ropeway (also from the maintenance vehicle during inspection)
- Start/stop station
- Emergency stop
- Speed control
- Access control on/off
- Forward/backward conveyor chain
- Various station functions

Easy monitoring of the ropeway via the **mobile operation monitoring system** using external PCs, smartphones or tablets.

Considerable **ease of maintenance work** and mandatory daily **station inspections** thanks to **location-independent visualization** of the installation status, e.g.:

- General status
- Stop and maintenance bypass
- Wind speeds/wind speed recording
- Status of the batteries
- Status of the brakes
- Various monitoring recordings

